Trend Study 9R-2-01

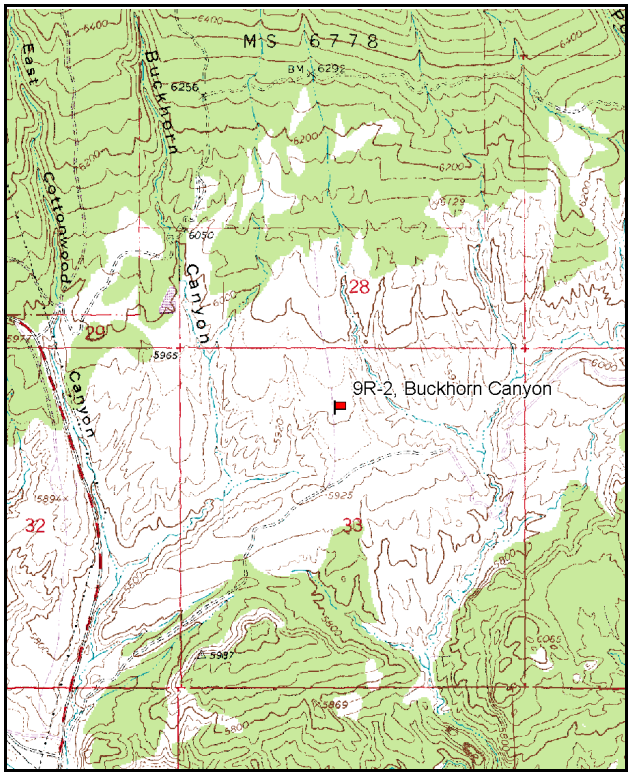
Study site name: Buckhorn Canyon . Vegetation type: Big Sagebrush .

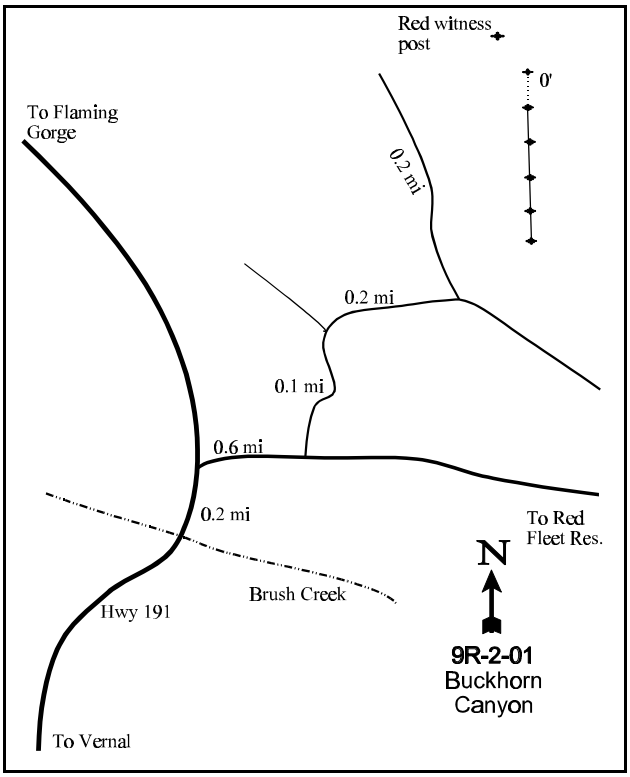
Compass bearing: frequency baseline 158 degrees magnetic.

Frequency belt placement: line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft), line 5 (95 ft).

LOCATION DESCRIPTION

From Vernal proceed north on Highway 191. After Highway 191 crosses brush creek continue 0.2 miles and turn right onto the road that leads to Red Fleet Reservoir. On this road proceed 0.6 miles. Turn left onto a dirt road. Go 0.1 miles to a fork. Turn right and go 0.2 miles to another fork. Turn left and go 0.2 miles. The witness post is a red full high fence post about 50 feet to the east. The 0-foot stake is 45 to the south at 148 degrees magnetic.





Map Name: Donkey Flat

Diagrammatic Sketch

Township 3N , Range 22E , Section 33

UTM 4495924 N 630960 E

DISCUSSION

Trend Study No. 9R-2

The Buckhorn Canyon study is located approximately 11 miles north of Vernal off Highway 191. The study was established in 2001 to monitor winter use by big game, primarily mule deer. The study site lies on a gentle, south facing slope at an elevation of 5,850 feet. Deer use on the site is heavy, with use by elk and livestock being much lighter. A pellet group transect read along the vegetation baseline in 2001 estimated 175 deer days use/acre (431 ddu/ha), 28 elk days use/acre (69 edu/ha), and 28 cow days use/acre (68 cdu/ha). A lot of the pellet groups sampled had been displaced by runoff and overland flow.

Soils have a clay loam texture and a slightly alkaline soil reaction (7.7 pH). Effective rooting was estimated at just over 13 inches. Rock and pavement occur in very low amounts. There is a layer of stoniness found between 8 and 12 inches below the surface. Phosphorus and potassium are both low at 4.1 ppm and 57.6 ppm respectively. Values lower than 10 ppm for phosphorus, and 70 ppm for potassium can be limiting to plant growth and development. Low amounts of herbaceous vegetation and litter cover with high amounts of bare ground allow significant erosion to occur. An erosion condition class assessment categorized soils as having moderate erosion in 2001. This classification was due mostly to heavy pedestaling around sagebrush stems and surface litter translocation resulting from recent thunderstorms.

The site is dominated by Wyoming big sagebrush. Sagebrush density was estimated at 4,900 plants/acre in 2001. Nearly the entire population is composed of mature or decadent plants. Percent decadence in the population is high at 49%, where 45% (1,090 plants/acre) of the decadent plants were classified as dying. Recruitment is low at only 2% (80 plants/acre). The number of young plants is not adequate to replace the decadent, dying plants in the population should there be a die-off in the immediate future. Mature plants have very few seedheads and annual leader growth averaged less than 2 inches in 2001. Poor vigor is fairly high with 22% of the population classified with poor vigor. Use is moderate to heavy.

The herbaceous understory is poor. Grasses and forbs combine to produce less than one-forth of the cover on the site. Thickspike wheatgrass was the most abundant herbaceous species as it was present in 53% of the quadrats. Other perennial grasses sampled on the site include Sandberg bluegrass, bottlebrush squirreltail, needle-and-thread, and Indian ricegrass. Needle-and-thread had a patchy distribution on the site, while Sandberg bluegrass was found growing primarily underneath the safety of sagebrush crowns. Cheatgrass was also present, but it was small statured and occurs infrequently at this time. Forbs are insignificant on the site and will likely continue to be in the future. A treatment to thin and restore vigor to the sagebrush population, as well as improve understory productivity, should be considered in the future.

2001 APPARENT TREND ASSESSMENT

Soils appear to have a downward trend. Bare soil is high, pedestaling is severe, and displacement of surface litter is high. Herbaceous vegetation cover, which is best at holding soils in place, is low. The Wyoming big sagebrush population is in poor condition with a high percent decadency and poor vigor, compounded by moderate to heavy use. Density will likely decline in the future with a high proportion of decadent plants classified as dying (45%) and very low recruitment from young plants. The understory is sparse for a sagebrush community and will probably not improve without some type of mechanical treatment to thin the sagebrush population.

HERBACEOUS TRENDS --
Herd unit 9R, Study no: 2

Type	Species	Nested Frequency '01	Quadrat Frequency '01	Average Cover % '01
G	Agropyron dasystachyum	187	53	2.12
G	Bromus tectorum (a)	25	13	.09
G	Oryzopsis hymenoides	2	1	.03
G	Poa secunda	106	43	1.23
G	Sitanion hystrix	57	27	.96
G	Stipa comata	50	17	1.07
Total for Annual Grasses		25	13	0.09
Total for Perennial Grasses		402	141	5.42
Total for Grasses		427	154	5.51
F	Astragalus convallarius	5	3	.19
F	Calochortus nuttallii	11	5	.02
F	Descurainia pinnata (a)	50	23	.11
F	Lappula occidentalis (a)	100	44	.21
F	Machaeranthera canescens	2	1	.01
F	Phlox longifolia	124	53	.56
F	Ranunculus testiculatus (a)	9	4	.02
F	Sphaeralcea coccinea	67	31	.25
F	Townsendia spp.	20	6	.03
Total for Annual Forbs		159	71	0.35
Total for Perennial Forbs		229	99	1.07
Total for Forbs		388	170	1.43

BROWSE TRENDS --
Herd unit 9R, Study no: 2

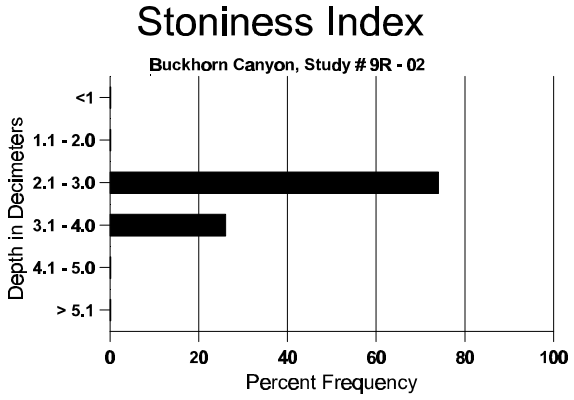
Type	Species	Strip Frequency '01	Average Cover % '01
B	Artemisia tridentata wyomingensis	73	21.31
B	Juniperus osteosperma	0	1.00
B	Opuntia spp.	14	.45
Total for Browse		87	22.76

BASIC COVER --
Herd unit 9R, Study no: 2

Cover Type	Nested Frequency '01	Average Cover % '01
Vegetation	387	27.13
Rock	10	.04
Pavement	191	.46
Litter	441	31.23
Cryptogams	176	4.40
Bare Ground	438	50.20

SOIL ANALYSIS DATA --
Herd Unit 9R, Study no: 02, Buckhorn Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.2	63.0 (13.1)	7.7	35.6	33.8	30.6	1.4	4.1	57.6	0.4



PELLET GROUP FREQUENCY --
Herd unit 9R, Study no: 2

Type	Quadrat Frequency '01	Pellet Transect	
		Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Rabbit	25	183	N/A
Elk	10	365	28 (69)
Deer	62	2271	175 (431)
Cattle	10	331	28 (68)

BROWSE CHARACTERISTICS --
Herd unit 9R, Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
Y	01	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
M	01	50	53	17	-	-	-	-	-	-	120	-	-	-	2400	19	28	120
D	01	61	45	12	1	2	-	-	-	-	67	-	-	54	2420			121
X	01	-	-	-	-	-	-	-	-	-	-	-	-	-	980			49
% Plants Showing '01				Moderate Use 41%			Heavy Use 12%				Poor Vigor 22%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'01		4900	Dec:		49%
Opuntia spp.																		
Y	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	01	14	-	-	-	-	-	-	-	-	14	-	-	-	280	3	11	14
D	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
% Plants Showing '01				Moderate Use 00%			Heavy Use 00%				Poor Vigor 00%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'01		420	Dec:		24%